

We claim:

1. An apparatus for producing ions from chemical species comprising:

- a. an ion source operated substantially at atmospheric pressure which produces ions from sample bearing solutions;
- b. at least two probes from which at least two solutions are introduced into said ion source;
- c. at least one means for producing ions from at least two solutions introduced into said ion source;
- d. means for mixing said ions produced; and
- e. a means for delivering ions into a vacuum region.

2. An apparatus according to claim 1, wherein said means for producing ions comprises an Electrospray means.

3. An apparatus according to claim 1, wherein said means for producing ions comprises an Electrospray with nebulization assist means.

4. An apparatus according to claim 1, wherein said means for producing ions comprises an Atmospheric Pressure Chemical Ionization means.

5. An apparatus according to claim 1, wherein said means for producing ions comprises both an Electrospray and an Atmospheric Pressure Chemical Ionization means.

6. An apparatus according to claim 1, wherein said means for producing ions comprises an Inductively Coupled Plasma means.

7. An apparatus according to claim 1, wherein said means for mixing said ions produced, mixes said ions substantially at atmospheric pressure.

8. An apparatus for analyzing chemical species comprising:

- a. an ion source operated substantially at atmospheric pressure which produces ions from sample bearing solutions;
- b. at least two probes from which at least two solutions are introduced into said ion source;
- c. at least one means for producing ions from at least two solutions introduced into said ion source;
- d. means for mixing said ions produced; and
- e. a means for mass analyzing said ions produced.

9. An apparatus according to claim 8, wherein said means for producing ions comprises an Electrospray means.

10. An apparatus according to claim 8, wherein said means for producing ions comprises an Electrospray with nebulization assist means.

11. An apparatus according to claim 8, wherein said means for producing ions comprises an Atmospheric Pressure Chemical Ionization means.

12. An apparatus according to claim 8, wherein said means for producing ions comprises both an Electrospray and an Atmospheric Pressure Chemical Ionization means.

13. An apparatus according to claim 8, wherein said means for producing ions comprises an Inductively Coupled Plasma means.

14. An apparatus according to claim 1, wherein said means for mixing said ions produced, mixes said ions substantially at atmospheric pressure.

15. An apparatus according to claim 8, wherein said means for mass analyzing said ions produced comprises a Time-Of-Flight mass spectrometer.

16. An apparatus according to claim 8, wherein said means for mass analyzing said ions produced comprises a Quadrupole mass spectrometer.

17. An apparatus according to claim 8, wherein said means for mass analyzing said ions produced comprises an Ion Trap mass spectrometer.

18. An apparatus according to claim 8, wherein said means for mass analyzing said ions produced comprises a Fourier Transform mass spectrometer.

19. An apparatus according to claim 8, wherein said means for mass analyzing said ions produced comprises a magnetic sector mass spectrometer.

20. An apparatus according to claim 8, wherein said means for mass analyzing said ions produced comprises a hybrid mass spectrometer.

21. An apparatus according to claim 8, wherein at least one of said at least two probes comprises a microtip.

22. An apparatus for producing ions from chemical species comprising:

- a. an ion source operated substantially at atmospheric pressure which produces ions from solutions;
- b. at least two probes from which at least two solutions are introduced into said ion source;
- c. the position of said at least two probes is fixed when at least two solutions are introduced into said ion source;
- d. at least one means for producing ions from at least two solutions introduced into said ion source; and
- e. a means for delivering ions into said vacuum region.

23. An apparatus according to claim 22, wherein said means for producing ions comprises an Electrospray means.

24. An apparatus according to claim 22, wherein said means for producing ions comprises an Electrospray with nebulization assist means.

25. An apparatus according to claim 22, wherein said means for producing ions comprises an Atmospheric Pressure Chemical Ionization means.

26. An apparatus according to claim 22, wherein said means for producing ions comprises both an Electrospray and an Atmospheric Pressure Chemical Ionization means.

27. An apparatus according to claim 22, wherein said means for producing ions comprises an Inductively Coupled Plasma means.

28. An apparatus according to claim 22, wherein said ions are produced from at least two solutions are mixed prior to entering said vacuum region.

29. An apparatus according to claim 22, wherein at least one of said at least two probes comprises a microtip.

30. An apparatus for analyzing chemical species comprising:

- a. an ion source which produces ions from sample bearing solutions;
- b. at least two probes from which at least two solutions are introduced into said ion source;
- c. an Electrospray ionization means for producing ions from at least two of said solutions simultaneously; and
- d. a means for mass analyzing said ions produced.